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## THE LATE PLEISTOCENE VERTEBRATE FAUNA FROM AVETRANA (TARANTO, APULIA, SOUTHERN ITALY): PRELIMINARY REPORT

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With 3 figures

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### Riassunto

In una cava inattiva, nei pressi della cittadina di Avetrana, a Est di Taranto (Puglia, Italia meridionale), è stata rinvenuta una ricca associazione faunistica a vertebrati contenuta nel riempimento di una cavità di origine carsica. Nella cava affiora la formazione delle "Calcareniti di Gravina", compatta di colore giallastro, con ricca malacofauna ed echinidi, ascrivibile al Pleistocene inferiore. A seguito di un saggio di scavo condotto nell'ottobre 2003 è stato possibile condurre una prima analisi stratigrafica del riempimento carsico, con campionamento dei diversi livelli riconosciuti e recupero di alcuni degli abbondanti reperti fossili affioranti. Attualmente i resti di vertebrati recuperati sono conservati presso la Soprintendenza di Taranto. Nel riempimento della fessura carsica indagata sono stati riconosciuti nove livelli fossiliferi e due tasche. Le specie presenti nel deposito sono riferibili al Pleistocene superiore.

### Abstract

In an abandoned quarry near Avetrana (Taranto, Apulia, Southern Italy) a fossiliferous karst filling deposit rich in vertebrate remains has been discovered. This deposit fills a wide karst fracture crossing a massive, yellow marine bio-calcarenite termed "Calcareniti di Gravina" Formation. This formation contains a rich macrofauna and echinids, referable to the Early Pleistocene. In October 2003, field activities including sampling of the sediments and a preliminary excavation of the fossiliferous levels started. Within the karst filling deposit nine levels and two pockets could be determined. The collected fossils are stored at the "Soprintendenza per i Beni Archeologici per la Puglia" (Taranto, Apulia).

This fossiliferous karst deposit can be referred to the Late Pleistocene.

### Introduction

The Salento Peninsula is well known in the palaeontological literature for its Late Pleistocene vertebrate faunas, mainly in its southern part (Blanc 1920, De Giuli 1983, Corridi 1987, Di Stefano et alii 1992, Bologna et alii 1994, Rustioni et alii 1994 among others). Data available for the Ionian northern part of Salento are quite rare. Here we

report the discovery of a new fossiliferous locality in the area of Taranto. It is a karst filling deposit rich in fossil bones located in an abandoned calcarenite quarry, in the area of Avetrana, not far from Manduria (Fig. 1).

After a preliminary survey during May 2003, carried on by some of the authors (D. Coppola and C. Petronio, in particular), a team of palaeontologists of the "La Sapienza" University, headed by Prof.



C. Petronio, started the field campaign, in accordance with "Soprintendenza per i Beni Archeologici per la Puglia". Field work was continued in October 2003, with activities of sampling sediments and a partial excavation of the fossiliferous levels. The collected fossils are stored at "Soprintendenza per i Beni Archeologici per la Puglia" (Taranto, Apulia).

In the present paper we present a preliminary analysis of the collected material and some general outlines of the fossiliferous karst deposit.

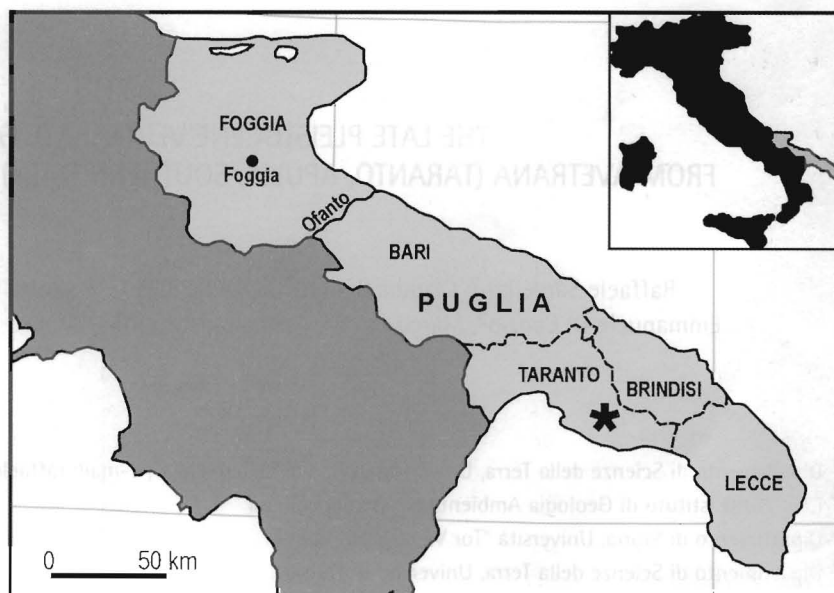


Fig. 1: Location of Avetrana

## Stratigraphy

The "Calcareniti di Gravina" Formation is a massive bio-calcarenite, rich in molluscs and echinids, that widely outcrops in the central-southern Apulian Peninsula; its age spans the Late Pliocene (Adriatic side) and Early Pleistocene (Ionian side) (Ciaranfi et alii 1988). In the considered quarry near Avetrana this formation is exposed in a section which is approximately 10 m thick. The vertebrate fossil bones occur in a karst fissure filling (Fig. 3). The sediments containing fossil vertebrates are divided into two parts: the upper part fills the main cavity (layers 1 to 9), the lower part fills a network of small fissures which opened under the main one. The small fissures (layer 0 in Fig. 3) are filled with orange-yellow nonlaminated sandy clays rich in small and medium-sized vertebrate remains. The main cavity is filled with laminated sediments 4,5 to 5,5 m thick. From the bottom to the top the following levels have been determined (Fig 3):

- 1) 30 cm of clayey sand with rare altered calcareous pebbles and bones. A continuous level of calcareous pebbles constitutes the basal part of the layer.
- 2) 20 cm of sandy clay very rich in fossil remains.
- 3) 20 cm of clayey sand with some bones and rare calcareous pebbles.
- 4) 20 cm of sandy clay rich in fossil bones and calcareous pebbles. This layer is separated from layer 3 by an erosional surface which is marked by a level of calcareous pebbles and bones.

- 5) 140 cm of clayey sand with very abundant bones and rare calcareous pebbles. This layer is characterised by a level of bones and pebbles at its base and also by a sandy lens with rare bones 20 cm above the base of this layer.
- 6) 20 cm of sand with abundant bones and calcareous pebbles.
- 7) 40 cm of clay with abundant bones and large calcareous boulders, especially at the base of the layer (Fig. 2).
- 8) 75 cm of clay and bones, the bones are also concentrated at the base of the layer, separating it from the underlying layer.
- 9) 70 cm of clay with sparse bones, most of them decalcified.

## Palaeontology

Most of the fossil remains found at different levels of the main cavity are of medium to large size, mainly referable to *Bos primigenius* (Fig. 3). The preliminary analysis of the fossil material enables us to present the following faunal list:

Layer 0: AVES: *Perdix perdix*, *Columba livia*, *Athene noctua*, *Pyrhocorax graculus*; MAMMALIA: *Erinaceus europaeus*, *Lepus europaeus*, *Oryctolagus cuniculus*, *Hystrix* cf. *H. cristata*, *Terricola savi*, *Felis silvestris*.

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Layer 1: *Bos primigenius*.

Layer 2: *Vulpes vulpes*, *Canis lupus*, *Crocota crocuta*, *Lynx lynx*, *Stephanorhinus* sp., *Bos primigenius*, Bovidae indet., *Dama dama*, *Cervus elaphus*.

Layer 3: *Lepus europaeus*, *Vulpes vulpes*, *Canis lupus*, *Bos primigenius*, *Dama dama*, *Cervus elaphus*.

Layer 4: *Lepus europaeus*, *Vulpes vulpes*, *Canis lupus*, *Bos primigenius*, *Dama dama*, *Cervus elaphus*.

Layer 5: *Vulpes vulpes*, *Canis lupus*, *Bos primigenius*, *Cervus elaphus*, *Dama dama*.

Layer 6: *Vulpes vulpes*, *Canis lupus*, *Bos primigenius*, *Cervus elaphus*, *Dama dama*.

Layer 7: *Vulpes vulpes*, *Canis lupus*, *Crocota crocuta*, *Stephanorhinus* sp., *Bos primigenius*, *Cervus elaphus*, *Dama dama*, ?*Megaloceros giganteus*.

Layer 8: *Vulpes vulpes*, *Canis lupus*, *Lynx lynx*, *Panthera leo*, *Bos primigenius*, *Cervus elaphus*, *Dama dama*.

Layer 9: fossil bones are absent.

Layer 0 is characterised by the occurrence of small vertebrate remains. Bird remains are represented by some limb bones, while mammals are mainly represented by teeth. In particular, two lower molar teeth ( $M_2$  and  $M_3$ ) of *Erinaceus europaeus*, 7 well preserved mandibles and some  $M_1$  of *Terricola savi*,  $M_1$  and two  $M_2$  of a porcupine, slightly smaller than the living *Hystrix cristata*, have been recorded. Among lagomorphs the hare and the rabbit occur with some fragments of skull and mandible and some limb bones. Such taxa are also recorded from the main cavity deposit (from layers 2 to 8) but are poorly represented. The wild cat is represented by fragmentary limb bones of peculiar size.

In the main cavity filling, *Bos primigenius* is the best-represented taxon in each fossiliferous level (1–8); layers 5 and 6 are very rich in limb bones, in some cases in anatomical connection. Layer 8 is also characterised by the occurrence of skull fragments and mandibles with jugal teeth.

Cervids are represented by some isolated teeth and limb bones (layers 2–8); two large-sized first phalanxes recorded in level 7 can probably be ascribed to *Megaloceros giganteus*. Among carnivores, the occurrence of the wolf and the red fox is testified by some isolated teeth, occurring from layers 2 to 8, the lynx and the cave lion are recorded from layer 8 (some teeth and a talus respectively).



Fig. 2: Fossil bones of layer 7 (scale bar: 20 cm).

The occurrence of a rhino is testified in layers 2 and 7. This taxon is represented by one fragmentary molar tooth and one pisiform in every layer.

The faunal assemblage on the whole can be referred to the Late Pleistocene. The occurrence of the fallow deer (in particular of the modern subspecies *Dama dama dama*) and of a rhino, generally referable to *Stephanorhinus* sp., recorded from layers 2 and 7, gives important biochronological constraints. In fact, the modern fallow deer was widespread in Italy at the beginning of the Late Pleistocene, while rhinos referable to the genus *Stephanorhinus* survived until the beginning of the Pleniglacial (MIS 3) (Gliozzi et alii 1997).

At the moment, only general considerations on the palaeoenvironmental conditions can be pointed out. In layer 0, the occurrence of *Terricola savi* and *Hystrix* cf. *H. cristata* suggests the presence of temperate climatic conditions with dry and open palaeoenvironments. Moreover, such a general framework is supported also by the occurrence of the avifauna including *Perdix perdix* and *Athene noctua*, while *Columba livia* and *Pyrrhocorax graculus* suggest the presence of rocky cliffs. In the sequence filling the main cavity (layer 1 to 8), large mammal species of a wider ecological significance occur.

Preliminary taphonomical observations indicate that the fossil bones seem to be not oriented. This



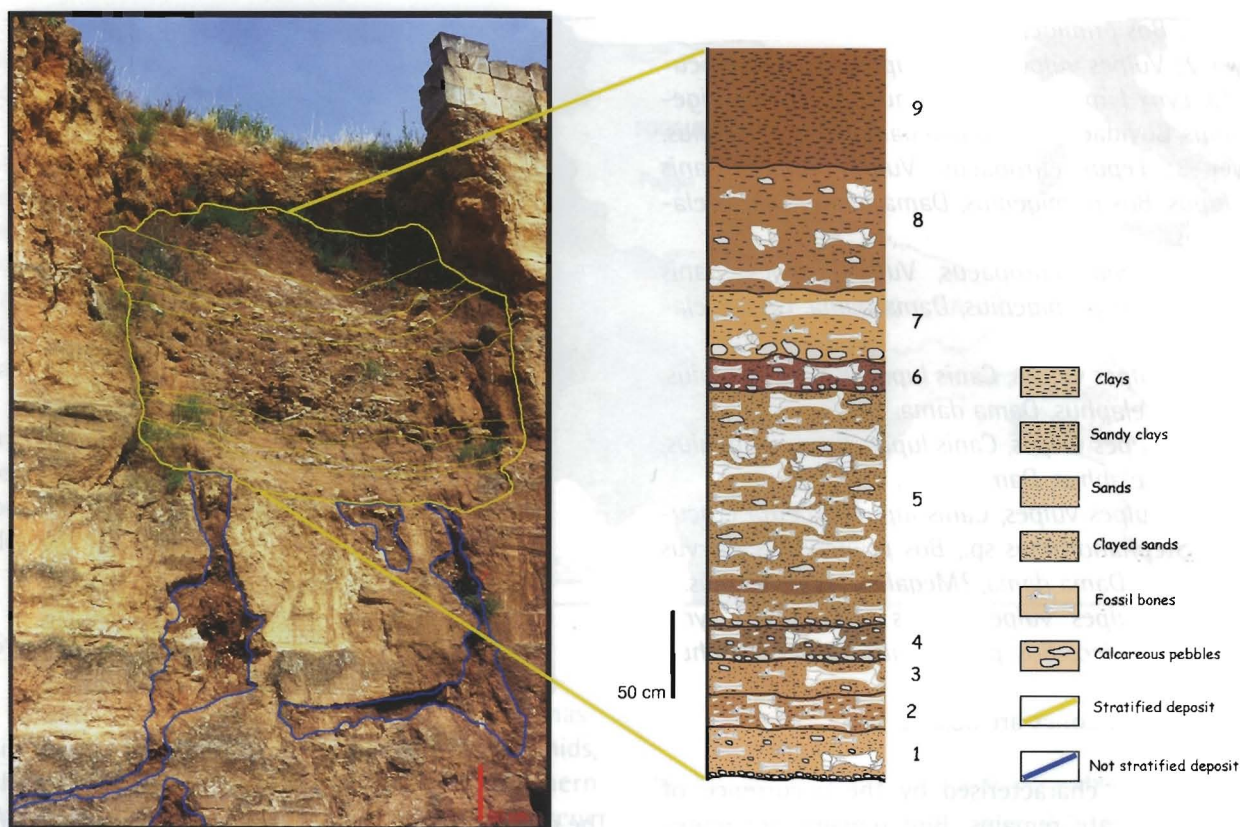


Fig. 3: Stratigraphy of the fossiliferous deposit

fact suggests quick deposition of the fossil-bearing sediments, which is also supported by sedimentological observations. In fact, the different layers are characterised by a normally graded distribution of the sediment, with the heaviest material like big bones and calcareous pebbles concentrated in the lowest part of the layer. Frequently such bones and pebbles constitute a well defined level at the base of the layer to separate one layer from the underlying one.

A detailed analysis of the fossil remains has just begun, in accordance with the "Soprintendenza ai Beni Archeologici per la Puglia", with the aim of providing further palaeontological information and a framework of the palaeoenvironmental evolution of the area during the Late Pleistocene.

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#### References

- Blanc, G. A. (1920): Grotta Romanelli. - Arch. Antrop. Etn., 50(1-4): 1-39.
- Bologna, P., Di Stefano, G., Manzi, G., Petronio, C., Sardella, R., Squazzini, E. (1994): Late Pleistocene mammals from the Melpignano (Le) "Ventarele": preliminary analysis and correlations. - Boll. Soc. Paleont. It., 33 (2): 265-274.

- Ciaranfi, N., Pieri, P., Ricchetti, G. (1988): Note alla Carta Geologica delle Murge e del Salento (Puglia centro-meridionale). - Mem. Soc. Geol. It., 41(1): 449-460.
- Corridi, C. (1987): Faune pleistoceniche del Salento: 2. La fauna di fondo Cattie, Maglie, Lecce. - Quaderni del Museo Comunale di Paleontologia, 3: 5-74.
- De Giuli, C. (1983): Le faune pleistoceniche del Salento: 1. La fauna di S. Sidero 3. - Quaderni del Museo Comunale di Paleontologia, 1: 45-84.
- Di Stefano, G., Petronio, C., Sardella, R., Savelloni, V., Squazzini, E. (1992): Nuove segnalazioni di brecce ossifere nella costa fra Castro Marina e Otranto (Lecce). - Il Quaternario, 5 (1): 3-10.
- Gliozzi, E., Abbazzi, L., Argenti, P., Azzaroli, A., Caloi, L., Capasso Barbato, L., Di Stefano, G., Esu, D., Ficarelli, G., Girotti, O., Kotsakis, T., Masini, F., Mazza, P., Mezzabotta C., Palombo, M. R., Petronio, C., Rook, L., Sala, B., Sardella, R., Zanalda, E., Torre, D. (1997): Biochronology of selected Mammals, Molluscs and Ostracods from the Middle Pliocene to the Late Pleistocene in Italy. The state of the art. - Riv. Ital. Paleont. Strat., 103(3): 369-388.
- Rustioni, M., Mazza, P., Abbazzi, L., Delfino, M., Rook, L., Petrucci, S., Vianello, F. (1994): The Würmian fauna from Sternatia (Lecce, Apulia, Italy). - Boll. Soc. Paleont. It., 33 (2): 279-288.

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